WHAT IS CLAIMED IS:

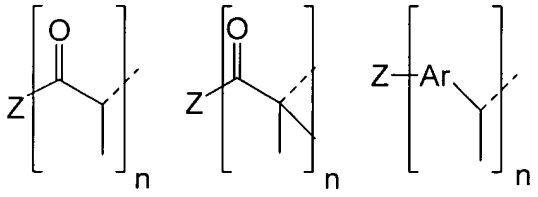
1. A film obtained by techniques for the conversion of thermoplastics, such as extrusion, starting from a composition comprising:

- from 95 to 100% by weight of at least one block copolymer corresponding to the formula $(A)_m$-$(B)_n$-I and

- from 0 to 5% by weight of at least one polymer A,

n being an integer greater than or equal to 2, m being an integer less than or equal to n, B being a polymer block, bonded directly to the core I via a covalent bond, obtained by the polymerization of a mixture of monomers (B_0) comprising at least 60% by weight of acrylic monomers (b_1) and A being a polymer block, bonded directly to the B block via a covalent bond, obtained by the polymerization of a mixture of monomers (A_0) comprising at least 60% by weight of methacrylic monomers (a_1),

the core (I) being an organic group corresponding to one of the following formulae:



Ia Ib Ic

in which Ar denotes a substituted aromatic group and Z denotes a polyfunctional organic or inorganic radical with a molar mass of greater than or equal to 14.

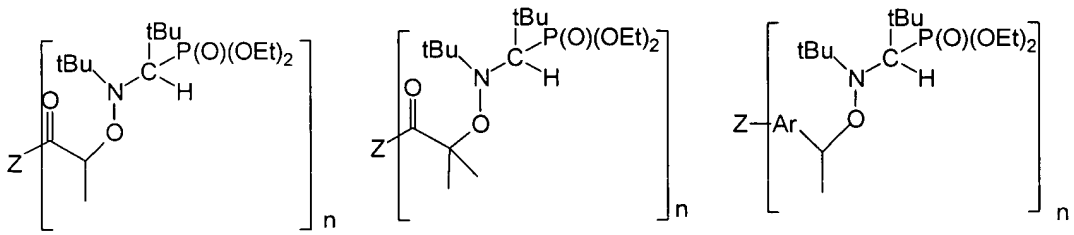
2. The film as claimed in claim 1, characterized in that said polyfunctional organic radical is chosen from 1,2-ethanedioxy, 1,3-propanedioxy, 1,4-butanedioxy, 1,6-hexanedioxy, 1,3,5-tris(2-ethoxy)cyanuric acid, polyaminoamine, such as polyethyleneamines or 1,3,5-tris(2-ethylamino)-cyanuric acid, polythioxy, phosphonate or polyphosphonate radicals.

3. The film as claimed in claim 1, characterized in that said polyfunctional inorganic radical is chosen from complexes of formula $M^{n+}O^{-}_{n}$ in which M is a magnesium, calcium, aluminum, titanium, zirconium, chromium, molybdenum, tungsten, manganese, iron, cobalt, nickel, palladium, platinum, copper, silver, gold, zinc or tin atom.

4. The film as claimed in any one of claims 1 to 3, characterized in that it is obtained according to the controlled polymerization process consisting of

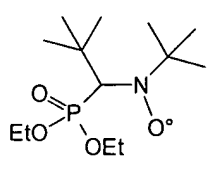
- the polymerization at a temperature of between 60 and 150°C of the mixture B_0 in the presence of an alkoxyamine and of an agent for controlling the polymerization up to a degree of conversion of 90%,
- the removal of a portion or of all of the unreacted monomers B_0,
- the addition and the polymerization of the mixture A_0,
- the removal of all of the unreacted monomers and recovery of the copolymer formed.

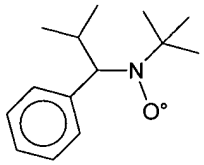
5. The film as claimed in claim 4, characterized in that the alkoxyamine is chosen from the compounds corresponding to one of the following formulae:



IIa **IIb** **IIc**

6. The film as claimed in claim 4 or 5, characterized in that the control agent is chosen from the compounds corresponding to one of the following formulae:





7. The film as claimed in one of the preceding claims, characterized in that the mixture of monomers B_0 comprises:

- from 60 to 100% by weight of acrylic monomers (b_1) chosen from alkyl acrylates with an alkyl chain comprising at least two carbon atoms and preferably at least four carbon atoms, such as butyl acrylate, octyl acrylate, nonyl acrylate, 2-ethylhexyl acrylate, polyethylene glycol acrylates or acrylonitrile,
- from 0 to 40% by weight of monomers (b_2) chosen from monomers which can be polymerized by the radical route, such as ethylenic, vinyl and similar monomers.

8. The film as claimed in any one of the preceding claims, characterized in that the mixture A_0 comprises

- from 60 to 100% by weight of at least one methacrylic monomer (a_1) chosen from alkyl methacrylates, such as methyl, butyl, octyl, nonyl or 2-ethylhexyl methacrylate, or also functional methacrylic derivatives, such as methacrylic acid, glycidyl methacrylate, methacrylonitrile or any methacrylate comprising an alcohol, amide or amine functional group,
- from 0 to 40% by weight of at least one monomer chosen from anhydrides, such as maleic anhydride, vinylaromatic monomers, such as styrene or its derivatives, in particular α-methylstyrene, and the monomers corresponding to (b_1).

9. The film as claimed in any one of the preceding claims, characterized in that the monomers B_0 represent from 10 to 60% by weight of the total weight of the monomers composing the copolymer.

10. The film as claimed in any one of the preceding claims, characterized in that the B block represents from 10 to 50% by weight of the copolymer and preferably between 20 and 50%.

11. The film as claimed in one of the preceding claims, characterized in that the B block exhibits a T_g of less than 0°C.

12. The film as claimed in any one of the preceding claims, characterized in that it exhibits elastomeric domains B with a size of less than 50 nm.

13. The film as claimed in any one of the preceding claims, characterized in that it exhibits a thickness of between 50 and 200 microns and preferably between 70 and 90 microns.

14. The film as claimed in any one of the preceding claims, having a modulus of elasticity of between 300 and 1800 MPa, a haze of less than 2 and an elongation at break of greater than 60%.

15. The film as claimed in any one of the preceding claims, characterized in that it additionally comprises an inorganic or organic pigment.

16. The use of a film as claimed in any one of claims 1 to 15, as surface treatment for the protection of materials of acrylonitrile-butadiene-styrene (ABS), polycarbonate (PC), poly(vinyl chloride) (PVC), polystyrene (PS), high impact polystyrene (HIPS) or polypropylene(PP) type.

17. The use of a film as claimed in any one of claims 1 to 15 in in-mold decoration.

18. The use of a film as claimed in any one of claims 1 to 15 in lamination decoration.

19. The use of a film as claimed in any one of claims 1 to 15 for the coating of screens.

20. The use of a film as claimed in any one of claims 1 to 15 as paint substitute.

21. A component based on PS, PC, PP, PVC or ABS, surface treated as claimed in any one of claims 16 to 20.

22. The use of the component as claimed in claim 21 at a temperature ranging from – 40 to 100°C.